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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK W. WANLASS and PHILLIP S. AHRENKIEL

Appeal 2009-009370
Application 10/526,785
Technology Center 1700

Before TERRY J. OWENS, BEVERLY A. FRANKLIN, and KAREN M. HASTINGS, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL[1]

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-30. We have jurisdiction under 35 U.S.C. § 6(b).

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

STATEMENT OF THE CASE

Claims 1 and 26 are representative of the subject matter on appeal and are set forth below:

> 1. A heterostructure containing semiconductor alloys for minimizing dislocations resulting from lattice mismatch of an active, heteroepitaxial layer, the heterostructure comprising:
>
> a substrate;
>
> a compositionally graded region terminated by a strained buffer layer;
>
> a relaxed intermediate region;
>
> an active layer, wherein a lattice constant of the buffer layer parallel to the substrate is matched to a lattice constant of the relaxed intermediate region to discourage glide of threading dislocations from the strained buffer layer to the active layer; and
>
> a capping layer.
>
> 26. The heterostructure of claim 1 wherein the buffer layer is a compositional overshoot which compensates for residual strain in the buffer layer such that the lattice constant in a growth plane matches that of the relaxed lattice constant of both the intermediate region and the active layer.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Forrest	5,518,934	May 21, 1996
Dries	6,229,152 B1	May 8, 2001
Chu	6,350,993 B1	Feb. 26, 2002

THE REJECTION(S)

1. Claims 26 and 30 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

2. Claims 26 and 30 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

3. Claims 1-30 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

4. Claims 1-25 and 27-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Forrest in view of Dries.

5. Claims 26 and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Forrest in view of Dries as applied to claims 1-25 and 27-29 above, and further in view of Chu.

ANALYSIS

I. The Rejection of Claims 26 and 30 under 35 U.S.C. § 112, second paragraph, as being indefinite.

The Examiner's position is that with regard to the term "a compositional overshoot," it is unclear what the composition is supposed to "overshoot." Ans. 4.

Appellants extensively argue that "compositional overshoot" is not indefinite because this term is described in the Specification when discussing lattice mismatch *f*, which Appellants indicate is interchangeable with composition. Br. 4-6. Appellants assert how lattice mismatch *f* is interchangeable with composition in their Reply Brief on pages 4-8.

We are not convinced by Appellants' arguments because Appellants have not established that one skilled in the art would know the meaning of the term "compositional overshoot" in view of the Specification. Appellants

rely heavily upon Vegard's Law (Brief, p. 5) and equations as set forth on pages 4-5 of the Reply Brief, in an effort to relate lattice mismatch *f* (which is discussed in the Specification) with composition. However, none of this information is set forth in the Specification. As such, Appellants have not met their burden. A claim satisfies the definiteness requirement of 35 U.S.C. § 112, ¶ 2 when one skilled in the art understands the claim parameters as read in light of the Specification. *Personalized Media Communications, LLC v. Int'l. Trade Com'n.*, 161 F.3d 696, 705 (Fed. Cir. 1998) ("If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more.") (quoting *Miles Lab., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993)).

In view of the above, we affirm the rejection.

II. The Rejection of Claims 26 and 30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Because it has been determined that the term "compositional overshoot" is indefinite, we are unable to reach a decision with respect to the rejection of claims 26 and 30 under 35 U.S.C. § 112, first paragraph, written description, based upon the use of the term "compositional overshoot," as we cannot ascertain whether there is written descriptive support for an indefinite term. "[T]he 'essential goal' of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is *claimed.*[emphasis added]" *In re Barker*, 559 F.2d 588, 592 n.4 (CCPA 1977).

III. The Rejection of Claims 1-30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

The Examiner's position is that there is no support for "to discourage glide of threading dislocations" as recited in claim 1, and the Examiner asserts that the Specification does not teach "glide of threading dislocations" and does teach discouraging "glide." The Examiner also states that there is no support for the "lattice constant of the buffer layer" being matched to the" relaxed intermediate region" as recited in claim 1. The Examiner asserts that the Specification merely teaches the intermediate region is matched to the active layer, and refers to paragraph [0054] of the published Specification. Ans. 3-4.

With respect to the concept of discouraging dislocation, on pages 6-7 of the Brief, Appellants refer to parts of the Specification and assert that support exists for this phrase. Appellants also argue this position in their Reply Brief on pages 8-9.

"The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language." *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983). In other words, the question is whether the added limitation introduces a new concept into the written description. *See In re Anderson*, 471 F.2d 1237, 1244 (CCPA 1973) ("The question, as we view it, is not whether 'carrying' was a word *used* in the specification as filed but whether there is *support* in the specification for

employment of the term in a claim; is the concept of carrying present in the original disclosure?").

Appellants' Specification indicates that an intermediate region serves to "prevent threading dislocations from reaching the active region." Spec. p. 1, ll. 13-15. The Specification also discloses "to prevent threading dislocations from extending into the active layer." Spec. p. 1, ll. 26-27. Appellants explain that threading dislocations will respond to stress by re-configuring themselves ("gliding" or "propagating"). Reply Brief, 9. In view of the Specification disclosure, we conclude that the phrase such as "to discourage glide dislocations" is not a new concept and therefore Appellants' Specification satisfies the written description requirement in this regard.

With regard to the concept of the lattice constant of the buffer layer being matched to the relaxed intermediate region, we also agree with Appellants' explanation as set forth on page 7 of the Brief and on page 9 of the Reply Brief, and determine there is adequate written description in the Specification for the reasons discussed by Appellants. *In re Kaslow*, at 1375; *In re Anderson*, at 1244. The Examiner asserts that there is only support for matching the buffer layer to the active layer, not the intermediate region. Ans. 10. However, Appellants' convincingly explain error in this position in the last two paragraphs on page 9 of the Reply Brief.

In view of the above, we reverse the rejection of claims 1-30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

IV. The Rejection of Claims 1-25 and 27-29 under 35 U.S.C. § 103(a) as being unpatentable over Forrest in view of Dries.

We refer to the Examiner's position as set forth on pages 4-7 and on pages 11-13 of the Answer, and incorporate the position therein as our own. We add the following for emphasis only.

As pointed out by the Examiner repeatedly throughout the Answer, Appellants' arguments do not address the Examiner's specific rejection. *See, e.g.*, pages 11-12 of the Answer. Such arguments are unpersuasive. For example, the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991); *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). Thus, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Also, Appellants do not address the specific teachings of the applied references as relied upon by the Examiner as stated by the Examiner throughout the Answer.

The Examiner's position is reasonable for the reasons expressed by the Examiner in the rejection, and hence the burden shifts to Appellants to come forward with evidence and/or arguments to rebut the Examiner's position.

Because Appellants' misdirected arguments do not adequately address the Examiner's position of obviousness for the reasons expressed by the Examiner, we affirm this rejection.

V. The Rejection of Claims 26 and 30 under 35 U.S.C. §103(a) as being unpatentable over Forrest in view of Dries as applied to claims 1-25 and 27-29 above, and further in view of Chu.

As pointed out by the Examiner on page 13 of the Answer, Appellants do not address the portion of Chu relied upon by the Examiner (i.e., Appellants again do not address the Examiner's rejection and the express teachings of the applied art). Furthermore, Appellants do not address this point raised by the Examiner in their Reply Brief.

Hence, for the same reasons that we affirmed the previous rejection, we affirm this rejection also.

DECISION

1. The rejection of claims 26 and 30 under 35 U.S.C. § 112, second paragraph, as being indefinite is affirmed.

2. The rejection of claims 26 and 30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, is not reached.

3. The rejection of claims 1-30 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement is reversed.

4. The rejection of claims 1-25 and 27-29 under 35 U.S.C. § 103(a) as being unpatentable over Forrest in view of Dries is affirmed.

5. The rejection of claims 26 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Forrest in view of Dries as applied to claims 1-25 and 27-29 above, and further in view of Chu is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v).

AFFIRMED

kmm

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